



SEQUENCE LISTING

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<120> BACTERIAL PHEROMONES AND USES THEREFOR

<130> 49946-60261

<140> 09/445,289
<141> 2000-05-11

<150> PCT/GB98/01619
<151> 1998-06-03

<150> GB 9711389.8
<151> 1997-06-04

<150> GB 9811221.2
<151> 1998-05-27

<160> 63

<170> PatentIn Ver. 3.3

<210> 1
<211> 362
<212> PRT
<213> Mycobacterium tuberculosis

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35 40 45
Val Glu Glu Asn Gly Phe Ser Val Asp Asp Arg Asp Asp Leu Tyr Pro
50 55 60
Ala Ala Gly Val Gln Val His Asp Ala Asp Thr Ile Val Leu Arg Arg
65 70 75 80
Ser Arg Pro Leu Gln Ile Ser Leu Asp Gly His Asp Ala Lys Gln Val
85 90 95
Trp Thr Thr Ala Ser Thr Val Asp Glu Ala Leu Ala Gln Leu Ala Met
100 105 110
Thr Asp Thr Ala Pro Ala Ala Ala Ser Arg Ala Ser Arg Val Pro Leu
115 120 125

Ser Gly Met Ala Leu Pro Val Val Ser Ala Lys Thr Val Gln Leu Asn
 130 135 140
 Asp Gly Gly Leu Val Arg Thr Val His Leu Pro Ala Pro Asn Val Ala
 145 150 155 160
 Gly Leu Leu Ser Ala Ala Gly Val Pro Leu Leu Gln Ser Asp His Val
 165 170 175
 Val Pro Ala Ala Thr Ala Pro Ile Val Glu Gly Met Gln Ile Gln Val
 180 185 190
 Thr Arg Asn Arg Ile Lys Lys Val Thr Glu Arg Leu Pro Leu Pro Pro
 195 200 205
 Asn Ala Arg Arg Val Glu Asp Pro Glu Met Asn Met Ser Arg Glu Val
 210 215 220
 Val Glu Asp Pro Gly Val Pro Gly Thr Gln Asp Val Thr Phe Ala Val
 225 230 235 240
 Ala Glu Val Asn Gly Val Glu Thr Gly Arg Leu Pro Val Ala Asn Val
 245 250 255
 Val Val Thr Pro Ala His Glu Ala Val Val Arg Val Gly Thr Lys Pro
 260 265 270
 Gly Thr Glu Val Pro Pro Val Ile Asp Gly Ser Ile Trp Asp Ala Ile
 275 280 285
 Ala Gly Cys Glu Ala Gly Gly Asn Trp Ala Ile Asn Thr Gly Asn Gly
 290 295 300
 Tyr Tyr Gly Gly Val Gln Phe Asp Gln Gly Thr Trp Glu Ala Asn Gly
 305 310 315 320
 Gly Leu Arg Tyr Ala Pro Arg Ala Asp Leu Ala Thr Arg Glu Glu Gln
 325 330 335
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 Pro Val Cys Ala Ala Arg Ala Gly Ala Arg
 355 360

<210> 2
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 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 2
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 20 25 30

Leu Val Thr Thr Ser Pro Ala Gly Ile Ala Asn Ala Asp Asp Ala Gly
 35 40 45
 Leu Asp Pro Asn Ala Ala Ala Gly Pro Asp Ala Val Gly Phe Asp Pro
 50 55 60
 Asn Leu Pro Pro Ala Pro Asp Ala Ala Pro Val Asp Thr Pro Pro Ala
 65 70 75 80
 Pro Glu Asp Ala Gly Phe Asp Pro Asn Leu Pro Pro Pro Leu Ala Pro
 85 90 95
 Asp Phe Leu Ser Pro Pro Ala Glu Glu Ala Pro Pro Val Pro Val Ala
 100 105 110
 Tyr Ser Val Asn Trp Asp Ala Ile Ala Gln Cys Glu Ser Gly Gly Asn
 115 120 125
 Trp Ser Ile Asn Thr Gly Asn Gly Tyr Tyr Gly Gly Leu Arg Phe Thr
 130 135 140
 Ala Gly Thr Trp Arg Ala Asn Gly Gly Ser Gly Ser Ala Ala Asn Ala
 145 150 155 160
 Ser Arg Glu Glu Gln Ile Arg Val Ala Glu Asn Val Leu Arg Ser Gln
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 Gly Ile Arg Ala Trp Pro Val Cys Gly Arg Arg Gly
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<210> 3
 <211> 174
 <212> PRT
 <213> Mycobacterium leprae

<400> 3
 Met Ser Glu Ser Tyr Arg Lys Leu Thr Thr Ser Ser Ile Ile Val Ala
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 Lys Ile Thr Phe Thr Gly Ala Met Leu Asp Gly Ser Ile Ala Leu Ala
 20 25 30
 Gly Gln Ala Ser Pro Ala Thr Asp Ser Glu Trp Asp Gln Val Ala Arg
 35 40 45
 Cys Glu Ser Gly Gly Asn Trp Ser Ile Asn Thr Gly Asn Gly Tyr Leu
 50 55 60
 Gly Gly Leu Gln Phe Ser Gln Gly Thr Trp Ala Ser His Gly Gly Gly
 65 70 75 80
 Glu Tyr Ala Pro Ser Ala Gln Leu Ala Thr Arg Glu Gln Gln Ile Ala
 85 90 95
 Val Ala Glu Arg Val Leu Ala Thr Gln Gly Ser Gly Ala Trp Pro Ala
 100 105 110

Cys Gly His Gly Leu Ser Gly Pro Ser Leu Gln Glu Val Leu Pro Ala
 115 120 125

Gly Met Gly Ala Pro Trp Ile Asn Gly Ala Pro Ala Pro Leu Ala Pro
 130 135 140

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 145 150 155 160

Pro Pro Thr Pro Gly Asp Val Pro Ser Pro Leu Ala Arg Pro
 165 170

<210> 4

<211> 407

<212> PRT

<213> Mycobacterium tuberculosis

<400> 4

Met Ser Gly Arg His Arg Lys Pro Thr Thr Ser Asn Val Ser Val Ala
 1 5 10 15

Lys Ile Ala Phe Thr Gly Ala Val Leu Gly Gly Gly Gly Ile Ala Met
 20 25 30

Ala Ala Gln Ala Thr Ala Ala Thr Asp Gly Glu Trp Asp Gln Val Ala
 35 40 45

Arg Cys Glu Ser Gly Gly Asn Trp Ser Ile Asn Thr Gly Asn Gly Tyr
 50 55 60

Leu Gly Gly Leu Gln Phe Thr Gln Ser Thr Trp Ala Ala His Gly Gly
 65 70 75 80

Gly Glu Phe Ala Pro Ser Ala Gln Leu Ala Ser Arg Glu Gln Gln Ile
 85 90 95

Ala Val Gly Glu Arg Val Leu Ala Thr Gln Gly Arg Gly Ala Trp Pro
 100 105 110

Val Cys Gly Arg Gly Leu Ser Asn Ala Thr Pro Arg Glu Val Leu Pro
 115 120 125

Ala Ser Ala Ala Met Asp Ala Pro Leu Asp Ala Ala Val Asn Gly
 130 135 140

Glu Pro Ala Pro Leu Ala Pro Pro Pro Ala Asp Pro Ala Pro Pro Val
 145 150 155 160

Glu Leu Ala Ala Asn Asp Leu Pro Ala Pro Leu Gly Glu Pro Leu Pro
 165 170 175

Ala Ala Pro Ala Asp Pro Ala Pro Pro Ala Asp Leu Ala Pro Pro Ala
 180 185 190

Pro Ala Asp Val Ala Pro Pro Val Glu Leu Ala Val Asn Asp Leu Pro
 195 200 205

Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Asp Pro Ala Pro
 210 215 220
 Pro Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Ala
 225 230 235 240
 Pro Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Val
 245 250 255
 Glu Leu Ala Val Asn Asp Leu Pro Ala Pro Leu Gly Glu Pro Leu Pro
 260 265 270
 Ala Ala Pro Ala Glu Leu Ala Pro Pro Ala Asp Leu Ala Pro Ala Ser
 275 280 285
 Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Ala Pro
 290 295 300
 Ala Glu Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Ala Ala
 305 310 315 320
 Val Asn Glu Gln Thr Ala Pro Gly Asp Gln Pro Ala Thr Ala Pro Gly
 325 330 335
 Gly Pro Val Gly Leu Ala Thr Asp Leu Glu Leu Pro Glu Pro Asp Pro
 340 345 350
 Gln Pro Ala Asp Ala Pro Pro Pro Gly Asp Val Thr Glu Ala Pro Ala
 355 360 365
 Glu Thr Pro Gln Val Ser Asn Ile Ala Tyr Thr Lys Lys Leu Trp Gln
 370 375 380
 Ala Ile Arg Ala Gln Asp Val Cys Gly Asn Asp Ala Leu Asp Ser Leu
 385 390 395 400
 Ala Gln Pro Tyr Val Ile Gly
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<210> 5

<211> 155

<212> PRT

<213> Mycobacterium leprae

<400> 5

Met Pro Gly Glu Met Leu Asp Val Arg Lys Leu Cys Lys Leu Phe Val
 1 5 10 15
 Lys Ser Ala Val Val Ser Gly Ile Val Thr Ala Ser Met Ala Leu Ser
 20 25 30
 Thr Ser Thr Gly Met Ala Asn Ala Val Pro Arg Glu Pro Asn Trp Asp
 35 40 45
 Ala Val Ala Gln Cys Glu Ser Gly Arg Asn Trp Arg Ala Asn Thr Gly
 50 55 60

Asn Gly Phe Tyr Gly Gly Leu Gln Phe Lys Pro Thr Ile Trp Ala Arg
 65 70 75 80
 Tyr Gly Gly Val Gly Asn Pro Ala Gly Ala Ser Arg Glu Gln Gln Ile
 85 90 95
 Thr Val Ala Asn Arg Val Leu Ala Asp Gln Gly Leu Asp Ala Trp Pro
 100 105 110
 Lys Cys Gly Ala Ala Ser Asp Leu Pro Ile Thr Leu Trp Ser His Pro
 115 120 125
 Ala Gln Gly Val Lys Gln Ile Ile Asn Asp Ile Ile Gln Met Gly Asp
 130 135 140
 Thr Thr Leu Ala Ala Ile Ala Leu Asn Gly Leu
 145 150 155

<210> 6
 <211> 176
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 6
 Met His Pro Leu Pro Ala Asp His Gly Arg Ser Arg Cys Asn Arg His
 1 5 10 15
 Pro Ile Ser Pro Leu Ser Leu Ile Gly Asn Ile Ser Ala Thr Ser Gly
 20 25 30
 Asp Met Ser Ser Met Thr Arg Ile Ala Lys Pro Leu Ile Lys Ser Ala
 35 40 45
 Met Ala Ala Gly Leu Val Thr Ala Ser Met Ser Leu Ser Thr Ala Val
 50 55 60
 Ala His Ala Gly Pro Ser Pro Asn Trp Asp Ala Val Ala Gln Cys Glu
 65 70 75 80
 Ser Gly Gly Asn Trp Ala Ala Asn Thr Gly Asn Gly Lys Tyr Gly Gly
 85 90 95
 Leu Gln Phe Lys Pro Ala Thr Trp Ala Ala Phe Gly Gly Val Gly Asn
 100 105 110
 Pro Ala Ala Ala Ser Arg Glu Gln Gln Ile Ala Val Ala Asn Arg Val
 115 120 125
 Leu Ala Glu Gln Gly Leu Asp Ala Trp Pro Thr Cys Gly Ala Ala Ser
 130 135 140
 Gly Leu Pro Ile Ala Leu Trp Ser Lys Pro Ala Gln Gly Ile Lys Gln
 145 150 155 160
 Ile Ile Asn Glu Ile Ile Trp Ala Gly Ile Gln Ala Ser Ile Pro Arg
 165 170 175

<210> 7
 <211> 154
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 7
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 20 25 30
 Ala Thr Met Phe Val Ala Leu Leu Gly Leu Ser Thr Ile Ser Ser Lys
 35 40 45
 Ala Asp Asp Ile Asp Trp Asp Ala Ile Ala Gln Cys Glu Ser Gly Gly
 50 55 60
 Asn Trp Ala Ala Asn Thr Gly Asn Gly Leu Tyr Gly Gly Leu Gln Ile
 65 70 75 80
 Ser Gln Ala Thr Trp Asp Ser Asn Gly Gly Val Gly Ser Pro Ala Ala
 85 90 95
 Ala Ser Pro Gln Gln Gln Ile Glu Val Ala Asp Asn Ile Met Lys Thr
 100 105 110
 Gln Gly Pro Gly Ala Trp Pro Lys Cys Ser Ser Cys Ser Gln Gly Asp
 115 120 125
 Ala Pro Leu Gly Ser Leu Thr His Ile Leu Thr Phe Leu Ala Ala Glu
 130 135 140
 Thr Gly Gly Cys Ser Gly Ser Arg Asp Asp
 145 150

<210> 8
 <211> 99
 <212> PRT
 <213> Streptomyces coelicolor

<400> 8
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 1 5 10 15
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 20 25 30
 Asp Ala Ile Ala Ala Cys Glu Ser Ser Gly Asn Trp Gln Ala Asn Thr
 35 40 45
 Gly Asn Gly Tyr Tyr Gly Gly Leu Gln Phe Ala Arg Ser Ser Trp Ile
 50 55 60

Ala Ala Gly Gly Leu Lys Tyr Ala Pro Arg Ala Asp Leu Ala Thr Arg
 65 70 75 80

Gly Glu Gln Ile Ala Val Ala Glu Arg Leu Ala Arg Leu Gln Gly Met
 85 90 95

Ser Ala Trp

<210> 9

<211> 438

<212> PRT

<213> *Bacillus subtilis*

<400> 9

Met Gly Glu Arg Glu Gly Arg Val Asp Ser Leu Leu Asp Thr Leu Tyr
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Asn Leu Ser Glu Glu Lys Glu Ala Phe Phe Ile Thr Gln Lys Met Lys
 20 25 30

Lys Leu Phe Ser Val Lys Leu Ser Lys Ser Lys Val Ile Leu Val Ala
 35 40 45

Ala Cys Leu Leu Leu Ala Gly Ser Gly Thr Ala Tyr Ala Ala His Glu
 50 55 60

Leu Thr Lys Gln Ser Val Ser Val Ser Ile Asn Gly Lys Lys Lys His
 65 70 75 80

Ile Arg Thr His Ala Asn Thr Val Gly Asp Leu Leu Glu Thr Leu Asp
 85 90 95

Ile Lys Thr Arg Asp Glu Asp Lys Ile Thr Pro Ala Lys Gln Thr Lys
 100 105 110

Ile Thr Ala Asp Met Asp Val Val Tyr Glu Ala Ala Lys Pro Val Lys
 115 120 125

Leu Thr Ile Asn Gly Glu Glu Lys Thr Leu Trp Ser Thr Ala Lys Thr
 130 135 140

Val Gly Ala Leu Leu Asp Glu Gln Asp Val Asp Val Lys Glu Gln Asp
 145 150 155 160

Gln Ile Asp Pro Ala Ile Asp Thr Asp Ile Ser Lys Asp Met Lys Ile
 165 170 175

Asn Ile Glu Pro Ala Phe Gln Val Thr Val Asn Asp Ala Gly Lys Gln
 180 185 190

Lys Lys Ile Trp Thr Thr Ser Thr Thr Val Ala Asp Phe Leu Lys Gln
 195 200 205

Gln Lys Met Asn Ile Lys Asp Glu Asp Lys Ile Lys Pro Ala Leu Asp
 210 215 220

Ala Lys Leu Thr Lys Gly Lys Ala Asp Ile Thr Ile Thr Arg Ile Glu
 225 230 235 240
 Lys Val Thr Asp Val Val Glu Glu Lys Ile Ala Phe Asp Val Lys Lys
 245 250 255
 Gln Glu Asp Ala Ser Leu Glu Lys Gly Lys Glu Lys Val Val Gln Lys
 260 265 270
 Gly Lys Glu Gly Lys Leu Lys Lys His Phe Glu Val Val Lys Glu Asn
 275 280 285
 Gly Lys Glu Val Ser Arg Glu Leu Val Lys Glu Glu Thr Ala Glu Gln
 290 295 300
 Ser Lys Asp Lys Val Ile Ala Val Gly Thr Lys Gln Ser Ser Pro Lys
 305 310 315 320
 Phe Glu Thr Val Ser Ala Ser Gly Asp Ser Lys Thr Val Val Ser Arg
 325 330 335
 Ser Asn Glu Ser Thr Gly Lys Val Met Thr Val Ser Ser Thr Ala Tyr
 340 345 350
 Thr Ala Ser Cys Ser Gly Cys Ser Gly His Thr Ala Thr Gly Val Asn
 355 360 365
 Leu Lys Asn Asn Pro Asn Ala Lys Val Ile Ala Val Asp Pro Asn Val
 370 375 380
 Ile Pro Leu Gly Ser Lys Val His Val Glu Gly Tyr Gly Tyr Ala Ile
 385 390 395 400
 Ile Ala Ala Asp Thr Gly Ser Ala Ile Lys Gly Asn Lys Ile Asp Val
 405 410 415
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 420 425 430
 Ser Val Lys Val Leu Asn
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<210> 10

<211> 288

<212> PRT

<213> Bacillus subtilis

<400> 10

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 20 25 30
 Gly Asp Thr Leu Trp Gly Ile Ser Gln Lys Asn Gly Val Asn Leu Lys
 35 40 45

Asp	Leu	Lys	Glu	Trp	Asn	Lys	Leu	Thr	Ser	Asp	Lys	Ile	Ile	Ala	Gly
50						55					60				
Glu	Lys	Leu	Thr	Ile	Ser	Ser	Glu	Glu	Thr	Thr	Thr	Thr	Gly	Gln	Tyr
65					70					75					80
Thr	Ile	Lys	Ala	Gly	Asp	Thr	Leu	Ser	Lys	Ile	Ala	Gln	Lys	Phe	Gly
				85					90					95	
Thr	Thr	Val	Asn	Asn	Leu	Lys	Val	Trp	Asn	Asn	Leu	Ser	Ser	Asp	Met
			100					105					110		
Ile	Tyr	Ala	Gly	Ser	Thr	Leu	Ser	Val	Lys	Gly	Gln	Ala	Thr	Ala	Ala
		115					120					125			
Asn	Thr	Ala	Thr	Glu	Asn	Ala	Gln	Thr	Asn	Ala	Pro	Gln	Ala	Ala	Pro
	130					135					140				
Lys	Gln	Glu	Ala	Val	Gln	Lys	Glu	Gln	Pro	Lys	Gln	Glu	Ala	Val	Gln
145					150					155					160
Gln	Gln	Pro	Lys	Gln	Glu	Thr	Lys	Ala	Glu	Ala	Glu	Thr	Ser	Val	Asn
				165					170					175	
Thr	Glu	Glu	Lys	Ala	Val	Gln	Ser	Asn	Thr	Asn	Asn	Gln	Glu	Ala	Ser
			180					185					190		
Lys	Glu	Leu	Thr	Val	Thr	Ala	Thr	Ala	Tyr	Thr	Ala	Asn	Asp	Gly	Gly
		195					200					205			
Ile	Ser	Gly	Val	Thr	Ala	Thr	Gly	Ile	Asp	Leu	Asn	Lys	Asn	Pro	Asn
	210					215					220				
Ala	Lys	Val	Ile	Ala	Val	Asp	Pro	Asn	Val	Ile	Pro	Leu	Gly	Ser	Lys
					230					235					240
Val	Tyr	Val	Glu	Gly	Tyr	Gly	Glu	Ala	Thr	Thr	Ala	Ala	Asp	Thr	Gly
				245					250					255	
Gly	Ala	Ile	Lys	Gly	Asn	Lys	Ile	Asp	Val	Phe	Val	Pro	Glu	Lys	Ser
			260					265					270		
Ser	Ala	Tyr	Arg	Trp	Gly	Asn	Lys	Thr	Val	Lys	Ile	Lys	Ile	Leu	Asn
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<210> 11
<211> 320
<212> PRT
<213> Clostridium acetobutylicum
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<220>

<221> MOD_RES

<222> (2)..(3)

<223> Variable amino acid

<400> 11

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          20              25              30

Ser Lys Ile Ile Thr Tyr Lys Ser Asn Glu Gly Ser Ile Leu Ser Lys
          35              40              45

Asn Asn Ile Leu Val Gly Pro Lys Asp Lys Ile Gln Pro Ala Leu Asp
 50              55              60

Thr Asn Leu Lys Asn Gly Asp Lys Ile Tyr Ile Lys Lys Ala Ile Ser
 65              70              75              80

Val Glu Val Ala Val Asp Gly Lys Val Arg Arg Val Lys Ser Ser Glu
          85              90              95

Glu Thr Val Ser Lys Met Leu Lys Ala Glu Lys Ile Pro Leu Ser Lys
          100              105              110

Val Asp Lys Val Asn Ile Ser Arg Asn Ala Ala Ile Lys Lys Asn Met
          115              120              125

Lys Ile Ser Ile Thr Arg Val Asn Ser Gln Ile Thr Lys Glu Asn Gln
          130              135              140

Gln Val Asp Phe Pro Thr Glu Val Ile Ser Asp Asp Ser Met Gly Asn
          145              150              155              160

Asp Glu Lys Gln Val Ile Gln Gln Gly Gln Ala Gly Glu Lys Glu Val
          165              170              175

Phe Thr Lys Ile Val Tyr Glu Asp Gly Lys Ala Val Ser Lys Glu Ile
          180              185              190

Val Gly Glu Val Ile Lys Lys Glu Pro Thr Lys Gln Val Phe Lys Val
          195              200              205

Gly Thr Leu Gly Val Leu Lys Pro Asp Arg Gly Gly Arg Val Leu Tyr
          210              215              220

Lys Lys Ser Leu Gln Val Leu Ala Thr Ala Tyr Thr Asp Asp Phe Ser
          225              230              235              240

Phe Gly Ile Thr Ala Ser Gly Thr Lys Val Lys Arg Asp Ser Asp Gly
          245              250              255

Tyr Ser Ser Ile Ala Val Asp Pro Thr Val Ile Pro Leu Gly Thr Lys
          260              265              270

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Leu Tyr Val Pro Gly Tyr Gly Tyr Gly Val Val Ala Glu Asp Thr Gly
 275 280 285

Gly Ala Ile Lys Gly Asn Arg Leu Asp Leu Phe Phe Thr Ser Glu Arg
 290 295 300

Glu Cys Tyr Asp Trp Gly Ala Lys Asn Val Thr Val Tyr Ile Leu Lys
 305 310 315 320

<210> 12
 <211> 81
 <212> PRT
 <213> Clostridium perfringens

<400> 12
 Ala Glu Ala Tyr Thr Ala Ser Gly Met His Val Leu Arg Asp Pro Asn
 1 5 10 15

Gly Tyr Ser Thr Ile Ala Val Asp Pro Ser Val Ile Pro Leu Gly Thr
 20 25 30

Lys Leu Tyr Val Glu Gly Tyr Gly Tyr Ala Ile Ile Ala Ala Asp Thr
 35 40 45

Gly Gly Ala Ile Lys Gly Asn Arg Val Asp Leu Phe Phe Asn Thr Glu
 50 55 60

Ala Glu Ala Ser Asn Trp Gly Val Arg Asn Leu Asp Val Tyr Ile Leu
 65 70 75 80

Asn

<210> 13
 <211> 51
 <212> PRT
 <213> Unknown Organism

<220>
 <223> Description of Unknown Organism: RP-factor
 C-terminal domain peptide

<400> 13
 Thr Ile Val Val Lys Ser Gly Asp Ser Leu Trp Thr Leu Ala Asn Glu
 1 5 10 15

Tyr Glu Val Glu Gly Gly Trp Thr Ala Leu Tyr Glu Ala Asn Lys Gly
 20 25 30

Ala Val Ser Asp Ala Ala Val Ile Tyr Val Gly Gln Glu Leu Val Leu
 35 40 45

Pro Gln Ala
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<210> 14
<211> 46
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

<400> 14
Thr Ile Lys Val Lys Ser Gly Asp Ser Leu Trp Lys Leu Ser Arg Gln
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Tyr Asp Thr Thr Ile Ser Ala Leu Lys Ser Glu Asn Lys Leu Lys Ser
20 25 30
Thr Val Leu Tyr Val Gly Gln Ser Leu Lys Val Pro Glu Ser
35 40 45

<210> 15
<211> 44
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

<400> 15
Thr Ile Lys Val Lys Ser Gly Asp Ser Leu Trp Lys Leu Ala Gln Thr
1 5 10 15
Tyr Asn Thr Ser Val Ala Ala Leu Thr Ser Ala Asn His Leu Ser Thr
20 25 30
Thr Val Leu Ser Ile Gly Gln Thr Leu Thr Ile Pro
35 40

<210> 16
<211> 43
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

<400> 16
Thr Tyr Thr Val Lys Ser Gly Asp Ser Leu Trp Val Ile Ala Gln Lys
1 5 10 15

Phe Asn Val Thr Ala Gln Gln Ile Arg Glu Lys Asn Asn Leu Lys Thr
 20 25 30

Asp Val Leu Gln Val Gly Gln Lys Leu Val Ile
 35 40

<210> 17

<211> 43

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical
 wall-associated protein fragment

<400> 17

Lys Tyr Thr Val Lys Ser Gly Asp Ser Leu Trp Lys Ile Ala Asn Asn
 1 5 10 15

Ile Asn Leu Thr Val Gln Gln Ile Arg Asn Ile Asn Asn Leu Lys Ser
 20 25 30

Asp Val Leu Tyr Val Gly Gln Val Leu Lys Leu
 35 40

<210> 18

<211> 45

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical
 wall-associated protein fragment

<400> 18

Thr Tyr Thr Val Lys Ser Gly Asp Thr Ile Trp Ala Leu Ser Ser Lys
 1 5 10 15

Tyr Gly Thr Ser Val Gln Asn Ile Met Ser Trp Asn Asn Leu Ser Ser
 20 25 30

Ser Ser Ile Tyr Val Gly Gln Val Leu Ala Val Lys Gln
 35 40 45

<210> 19

<211> 45

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical
 wall-associated protein fragment

15

<400> 19

Thr His Ala Val Lys Ser Gly Asp Thr Ile Trp Ala Leu Ser Val Lys
1 5 10 15

Tyr Gly Val Ser Val Gln Asp Ile Met Ser Trp Asn Asn Leu Ser Ser
20 25 30

Ser Ser Ile Tyr Val Gly Gln Lys Leu Ala Ile Lys Gln
35 40 45

<210> 20

<211> 46

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

<400> 20

Ser Val Lys Val Lys Ser Gly Asp Thr Leu Trp Ala Leu Ser Val Lys
1 5 10 15

Tyr Lys Thr Ser Ile Ala Gln Leu Lys Ser Trp Asn His Leu Ser Ser
20 25 30

Asp Thr Ile Tyr Ile Gly Gln Asn Leu Ile Val Ser Gln Ser
35 40 45

<210> 21

<211> 43

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

<400> 21

Thr Tyr Thr Val Lys Ser Gly Asp Thr Leu Trp Gly Ile Ser Gln Arg
1 5 10 15

Tyr Gly Ile Ser Val Ala Gln Ile Gln Ser Ala Asn Asn Leu Lys Ser
20 25 30

Thr Ile Ile Tyr Ile Gly Gln Lys Leu Leu Leu
35 40

<210> 22

<211> 60

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

<400> 22

Thr	Tyr	Thr	Val	Lys	Lys	Gly	Asp	Thr	Leu	Trp	Asp	Ile	Ala	Gly	Arg
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Phe	Tyr	Gly	Asn	Ser	Thr	Gln	Trp	Arg	Lys	Ile	Trp	Asn	Ala	Asn	Lys
			20					25					30		

Thr	Ala	Met	Ile	Lys	Arg	Ser	Lys	Arg	Asn	Ile	Arg	Gln	Pro	Gly	His
		35					40					45			

Trp	Ile	Phe	Pro	Gly	Gln	Lys	Leu	Lys	Ile	Pro	Gln
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<210> 23

<211> 60

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: Hypothetical
wall-associated protein fragment

<400> 23

Thr	Tyr	Thr	Val	Lys	Lys	Gly	Asp	Thr	Leu	Trp	Asp	Leu	Ala	Gly	Lys
1				5					10					15	

Phe	Tyr	Gly	Asp	Ser	Thr	Lys	Trp	Arg	Lys	Ile	Trp	Lys	Val	Asn	Lys
			20					25					30		

Lys	Ala	Met	Ile	Lys	Arg	Ser	Lys	Arg	Asn	Ile	Arg	Gln	Pro	Gly	His
		35					40					45			

Trp	Ile	Phe	Pro	Gly	Gln	Lys	Leu	Lys	Ile	Pro	Gln
	50					55					60

<210> 24

<211> 167

<212> PRT

<213> Mycobacterium tuberculosis

<400> 24

Ala	Pro	Pro	Val	Glu	Leu	Ala	Ala	Asn	Asp	Leu	Pro	Ala	Pro	Leu	Gly
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Glu	Pro	Leu	Pro	Ala	Ala	Pro	Ala	Asp	Pro	Ala	Pro	Pro	Ala	Asp	Leu
			20					25					30		

Ala	Pro	Pro	Ala	Pro	Ala	Asp	Val	Ala	Pro	Pro	Val	Glu	Leu	Ala	Val
			35				40					45			

Asn	Asp	Leu	Pro	Ala	Pro	Leu	Gly	Glu	Pro	Leu	Pro	Ala	Ala	Pro	Ala
		50				55						60			

Asp Pro Ala Pro Pro Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu
65 70 75 80

Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu
85 90 95

Ala Pro Pro Val Glu Leu Ala Val Asn Asp Leu Pro Ala Pro Leu Gly
100 105 110

Glu Pro Leu Pro Ala Ala Pro Ala Glu Leu Ala Pro Pro Ala Asp Leu
115 120 125

Ala Pro Ala Ser Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala
130 135 140

Pro Pro Ala Pro Ala Glu Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala
145 150 155 160

Pro Pro Ala Ala Val Asn Glu
165

<210> 25

<211> 11

<212> PRT

<213> Mycobacterium tuberculosis

<400> 25

Ala Pro Pro Val Glu Leu Ala Ala Asn Asp Leu
1 5 10

<210> 26

<211> 11

<212> PRT

<213> Mycobacterium tuberculosis

<400> 26

Ala Pro Pro Val Glu Leu Ala Val Asn Asp Leu
1 5 10

<210> 27

<211> 15

<212> PRT

<213> Mycobacterium tuberculosis

<400> 27

Pro Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Asp Leu
1 5 10 15

<210> 28

<211> 15

<212> PRT

<213> Mycobacterium tuberculosis

<400> 28

Pro Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Glu Leu
 1 5 10 15

<210> 29

<211> 7

<212> PRT

<213> Mycobacterium tuberculosis

<400> 29

Pro Ala Pro Pro Ala Asp Leu
 1 5

<210> 30

<211> 8

<212> PRT

<213> Mycobacterium tuberculosis

<400> 30

Ala Pro Pro Ala Pro Ala Asp Leu
 1 5

<210> 31

<211> 8

<212> PRT

<213> Mycobacterium tuberculosis

<400> 31

Ala Pro Pro Ala Pro Ala Asp Val
 1 5

<210> 32

<211> 8

<212> PRT

<213> Mycobacterium tuberculosis

<400> 32

Ala Pro Pro Ala Pro Ala Glu Leu
 1 5

<210> 33

<211> 8

<212> PRT

<213> Mycobacterium tuberculosis

<400> 33

Ala Pro Pro Ala Pro Ala Glu Val
 1 5

<210> 34
 <211> 478
 <212> PRT
 <213> *Listeria monocytogenes*

<400> 34

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Met Asn Met Lys Lys Ala Thr Ile Ala Ala Thr Ala Gly Ile Ala Val
 1              5              10              15

Thr Ala Phe Ala Ala Pro Thr Ile Ala Ser Ala Ser Thr Val Val Val
          20              25              30

Glu Ala Gly Asp Thr Leu Trp Gly Ile Ala Gln Ser Lys Gly Thr Thr
          35              40              45

Val Asp Ala Ile Lys Lys Ala Asn Asn Leu Thr Thr Asp Lys Ile Val
          50              55              60

Pro Gly Gln Lys Leu Gln Val Asn Asn Glu Val Ala Ala Ala Glu Lys
          65              70              75              80

Thr Glu Lys Ser Val Ser Ala Thr Trp Leu Asn Val Arg Thr Gly Ala
          85              90              95

Gly Val Asp Asn Ser Ile Ile Thr Ser Ile Lys Gly Gly Thr Lys Val
          100              105              110

Thr Val Glu Thr Thr Glu Ser Asn Gly Trp His Lys Ile Thr Tyr Asn
          115              120              125

Asp Gly Lys Thr Gly Phe Val Asn Gly Lys Tyr Leu Thr Asp Lys Ala
          130              135              140

Val Ser Thr Pro Val Ala Pro Thr Gln Glu Val Lys Lys Glu Thr Thr
          145              150              155              160

Thr Gln Gln Ala Ala Pro Val Ala Glu Thr Lys Thr Glu Val Lys Gln
          165              170              175

Thr Thr Gln Ala Thr Thr Pro Ala Pro Lys Val Ala Glu Thr Lys Glu
          180              185              190

Thr Pro Val Ile Asp Gln Asn Ala Thr Thr His Ala Val Lys Ser Gly
          195              200              205

Asp Thr Ile Trp Ala Leu Ser Val Lys Tyr Gly Val Ser Val Gln Asp
          210              215              220

Ile Met Ser Trp Asn Asn Leu Ser Ser Ser Ser Ile Tyr Val Gly Gln
          225              230              235              240

Lys Leu Ala Ile Lys Gln Thr Ala Asn Thr Ala Thr Pro Lys Ala Glu
          245              250              255

Val Lys Thr Glu Ala Pro Ala Ala Glu Lys Gln Ala Ala Pro Val Val
          260              265              270

```

Lys Glu Asn Thr Asn Thr Asn Thr Ala Thr Thr Glu Lys Lys Glu Thr
 275 280 285

Ala Thr Gln Gln Gln Thr Ala Pro Lys Ala Pro Thr Glu Ala Ala Lys
 290 295 300

Pro Ala Pro Ala Pro Ser Thr Asn Thr Asn Ala Asn Lys Thr Asn Thr
 305 310 315 320

Asn Thr Asn Thr Asn Asn Thr Asn Thr Pro Ser Lys Asn Thr Asn Thr
 325 330 335

Asn Ser Asn Thr Asn Thr Asn Thr Asn Ser Asn Thr Asn Ala Asn Gln
 340 345 350

Gly Ser Ser Asn Asn Asn Ser Asn Ser Ser Ala Ser Ala Ile Ile Ala
 355 360 365

Glu Ala Gln Lys His Leu Gly Lys Ala Tyr Ser Trp Gly Gly Asn Gly
 370 375 380

Pro Thr Thr Phe Asp Cys Ser Gly Tyr Thr Lys Tyr Val Phe Ala Lys
 385 390 395 400

Ala Gly Ile Ser Leu Pro Arg Thr Ser Gly Ala Gln Tyr Ala Ser Thr
 405 410 415

Thr Arg Ile Ser Glu Ser Gln Ala Lys Pro Gly Asp Leu Val Phe Phe
 420 425 430

Asp Tyr Gly Ser Gly Ile Ser His Val Gly Ile Tyr Val Gly Asn Gly
 435 440 445

Gln Met Ile Asn Ala Gln Asp Asn Gly Val Lys Tyr Asp Asn Ile His
 450 455 460

Gly Ser Gly Trp Gly Lys Tyr Leu Val Gly Phe Gly Arg Val
 465 470 475

<210> 35

<211> 758

<212> DNA

<213> *Micrococcus luteus*

<220>

<221> CDS

<222> (66)..(728)

<400> 35

accaaggaga aggacgaccc cggtgtgcct cggccgccga tcagcgagga ctcgccatgg 60

acacc atg act ctc ttc acc act tcc gcc acc cgc tcc cgc cgt gcc acc 110
 Met Thr Leu Phe Thr Thr Ser Ala Thr Arg Ser Arg Arg Ala Thr
 1 5 10 15

gcc tcg atc gtc gcg ggc atg acc ctc gcc ggc gcc gcc gcc gtg ggc Ala Ser Ile Val Ala Gly Met Thr Leu Ala Gly Ala Ala Ala Val Gly	158
20 25 30	
ttc tcc gcc ccg gcc cag gcc gcc acc gtg gac acc tgg gac cgc ctc Phe Ser Ala Pro Ala Gln Ala Ala Thr Val Asp Thr Trp Asp Arg Leu	206
35 40 45	
gcc gag tgc gag tcc aac ggc acc tgg gac atc aac acc ggc aac ggc Ala Glu Cys Glu Ser Asn Gly Thr Trp Asp Ile Asn Thr Gly Asn Gly	254
50 55 60	
ttc tac ggc ggc gtg cag ttc acc ctg tcc tcc tgg cag gcc gtc ggc Phe Tyr Gly Gly Val Gln Phe Thr Leu Ser Ser Trp Gln Ala Val Gly	302
65 70 75	
ggc gaa ggc tac ccg cac cag gcc tcg aag gcc gag cag atc aag cgc Gly Glu Gly Tyr Pro His Gln Ala Ser Lys Ala Glu Gln Ile Lys Arg	350
80 85 90 95	
gcc gag atc ctc cag gac ctg cag ggc tgg ggc gcg tgg ccg ctg tgc Ala Glu Ile Leu Gln Asp Leu Gln Gly Trp Gly Ala Trp Pro Leu Cys	398
100 105 110	
tcg cag aag ctg ggc ctg acc cag gct gac gcg gac gcc ggt gac gtg Ser Gln Lys Leu Gly Leu Thr Gln Ala Asp Ala Asp Ala Gly Asp Val	446
115 120 125	
gac gcc acc gag gcc gcc ccg gtc gcc gtg gag cgc acg gcc acc gtg Asp Ala Thr Glu Ala Ala Pro Val Ala Val Glu Arg Thr Ala Thr Val	494
130 135 140	
cag cgc cag tcc gcc gcg gac gag gct gcc gcc gag cag gcc gct gcc Gln Arg Gln Ser Ala Ala Asp Glu Ala Ala Ala Glu Gln Ala Ala Ala	542
145 150 155	
gcg gag cag gcc gtc gtc gcc gag gcc gag acc atc gtc gtc aag tcc Ala Glu Gln Ala Val Val Ala Glu Ala Glu Thr Ile Val Val Lys Ser	590
160 165 170 175	
ggt gac tcc ctc tgg acg ctc gcc aac gag tac gag gtg gag ggt ggc Gly Asp Ser Leu Trp Thr Leu Ala Asn Glu Tyr Glu Val Glu Gly Gly	638
180 185 190	
tgg acc gcc ctc tac gag gcc aac aag ggc gcc gtc tcc gac gcc gcc Trp Thr Ala Leu Tyr Glu Ala Asn Lys Gly Ala Val Ser Asp Ala Ala	686
195 200 205	
gtg atc tac gtc ggc cag gag ctc gtc ctg ccg cag gcc tga Val Ile Tyr Val Gly Gln Glu Leu Val Leu Pro Gln Ala	728
210 215 220	
gacgcctgac cggcccccg gaccggtacc	758

<210> 36
 <211> 220
 <212> PRT
 <213> Micrococcus luteus

<400> 36
 Met Thr Leu Phe Thr Thr Ser Ala Thr Arg Ser Arg Arg Ala Thr Ala
 1 5 10 15
 Ser Ile Val Ala Gly Met Thr Leu Ala Gly Ala Ala Ala Val Gly Phe
 20 25 30
 Ser Ala Pro Ala Gln Ala Ala Thr Val Asp Thr Trp Asp Arg Leu Ala
 35 40 45
 Glu Cys Glu Ser Asn Gly Thr Trp Asp Ile Asn Thr Gly Asn Gly Phe
 50 55 60
 Tyr Gly Gly Val Gln Phe Thr Leu Ser Ser Trp Gln Ala Val Gly Gly
 65 70 75 80
 Glu Gly Tyr Pro His Gln Ala Ser Lys Ala Glu Gln Ile Lys Arg Ala
 85 90 95
 Glu Ile Leu Gln Asp Leu Gln Gly Trp Gly Ala Trp Pro Leu Cys Ser
 100 105 110
 Gln Lys Leu Gly Leu Thr Gln Ala Asp Ala Asp Ala Gly Asp Val Asp
 115 120 125
 Ala Thr Glu Ala Ala Pro Val Ala Val Glu Arg Thr Ala Thr Val Gln
 130 135 140
 Arg Gln Ser Ala Ala Asp Glu Ala Ala Ala Glu Gln Ala Ala Ala Ala
 145 150 155 160
 Glu Gln Ala Val Val Ala Glu Ala Glu Thr Ile Val Val Lys Ser Gly
 165 170 175
 Asp Ser Leu Trp Thr Leu Ala Asn Glu Tyr Glu Val Glu Gly Gly Trp
 180 185 190
 Thr Ala Leu Tyr Glu Ala Asn Lys Gly Ala Val Ser Asp Ala Ala Val
 195 200 205
 Ile Tyr Val Gly Gln Glu Leu Val Leu Pro Gln Ala
 210 215 220

<210> 37
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 37

gcsacsgtsg acacstggga ccgsctsgcs gag

33

<210> 38

<211> 19

<212> PRT

<213> Micrococcus luteus

<220>

<221> MOD_RES

<222> (13)

<223> Variable amino acid

<220>

<221> MOD_RES

<222> (18)

<223> Variable amino acid

<400> 38

Ala Thr Val Asp Thr Trp Asp Arg Leu Ala Glu Glu Xaa Ser Asn Gly
1 5 10 15

Thr Xaa Asp

<210> 39

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 39

ccgccgtaga agccgttg

18

<210> 40

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 40

agttcaccct gtcctcctg

19

<210> 41
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide

<220>
 <221> modified_base
 <222> (9)
 <223> i

<220>
 <221> modified_base
 <222> (15)
 <223> i

<220>
 <221> modified_base
 <222> (21)
 <223> i

<400> 41
 gcytgrtgng grtanccytc ncc

23

<210> 42
 <211> 12
 <212> PRT
 <213> Micrococcus luteus

<400> 42
 Val Gly Gly Glu Gly Tyr Pro His Gln Ala Ser Lys
 1 5 10

<210> 43
 <211> 182
 <212> PRT
 <213> Micrococcus luteus

<400> 43
 Ala Thr Val Asp Thr Trp Asp Arg Leu Ala Glu Cys Glu Ser Asn Gly
 1 5 10 15
 Thr Trp Asp Ile Asn Thr Gly Asn Gly Phe Tyr Gly Gly Val Gln Phe
 20 25 30
 Thr Leu Ser Ser Trp Gln Ala Val Gly Gly Glu Gly Tyr Pro His Gln
 35 40 45
 Ala Ser Lys Ala Glu Gln Ile Lys Arg Ala Glu Ile Leu Gln Asp Leu
 50 55 60
 Gln Gly Trp Gly Ala Trp Pro Leu Cys Ser Gln Lys Leu Gly Leu Thr
 65 70 75 80


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<210> 44
<211> 299
<212> DNA
<213> Streptomyces coelicolor
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<220>
<221> CDS
<222> (3) .. (299)
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<400> 44																
gg	atc	cgc	acc	gcc	gcg	gta	acc	ctg	gtc	gcc	gcg	acc	gca	ctc	ggg	47
Ile	Arg	Thr	Ala	Ala	Val	Thr	Leu	Val	Ala	Ala	Thr	Ala	Leu	Gly		
1					5					10				15		
gcg	acc	ggc	gaa	gcg	gtg	gcc	gcg	ccc	tcg	gcg	ccc	ctg	cgc	acc	gac	95
Ala	Thr	Gly	Glu	Ala	Val	Ala	Ala	Pro	Ser	Ala	Pro	Leu	Arg	Thr	Asp	
				20					25					30		
tgg	gac	gcc	atc	gcc	gcg	tgc	gag	tcc	agc	ggc	aac	tgg	cag	gcg	aac	143
Trp	Asp	Ala	Ile	Ala	Ala	Cys	Glu	Ser	Ser	Gly	Asn	Trp	Gln	Ala	Asn	
			35					40					45			
acc	ggc	aac	ggc	tac	tac	ggc	ggc	ctg	cag	ttc	gca	cgg	tcc	agc	tgg	191
Thr	Gly	Asn	Gly	Tyr	Tyr	Gly	Gly	Leu	Gln	Phe	Ala	Arg	Ser	Ser	Trp	
		50					55					60				
atc	gcc	gcc	ggc	ggc	ctc	aag	tac	gcc	ccg	cgc	gcg	gac	ctc	gcc	acc	239
Ile	Ala	Ala	Gly	Gly	Leu	Lys	Tyr	Ala	Pro	Arg	Ala	Asp	Leu	Ala	Thr	
	65					70					75					
cgc	ggc	gag	cag	atc	gcc	gtg	gcg	gaa	cgc	ctc	gcc	cgt	ctg	cag	ggg	287
Arg	Gly	Glu	Gln	Ile	Ala	Val	Ala	Glu	Arg	Leu	Ala	Arg	Leu	Gln	Gly	
80					85					90					95	

atg tcc gcc tgg
Met Ser Ala Trp

299

<210> 45
<211> 99
<212> PRT
<213> Streptomyces coelicolor

<400> 45
Ile Arg Thr Ala Ala Val Thr Leu Val Ala Ala Thr Ala Leu Gly Ala
1 5 10 15
Thr Gly Glu Ala Val Ala Ala Pro Ser Ala Pro Leu Arg Thr Asp Trp
20 25 30
Asp Ala Ile Ala Ala Cys Glu Ser Ser Gly Asn Trp Gln Ala Asn Thr
35 40 45
Gly Asn Gly Tyr Tyr Gly Gly Leu Gln Phe Ala Arg Ser Ser Trp Ile
50 55 60
Ala Ala Gly Gly Leu Lys Tyr Ala Pro Arg Ala Asp Leu Ala Thr Arg
65 70 75 80
Gly Glu Gln Ile Ala Val Ala Glu Arg Leu Ala Arg Leu Gln Gly Met
85 90 95
Ser Ala Trp

<210> 46
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 46
gtcagaattc atatggccac cgtggacacc tggg

34

<210> 47
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 47
tgacggatcc tattaggcct gcggcaggac gag

33

<210> 48
 <211> 35
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 48
 atcagaattc atatggacga catcgattgg gacgc 35

<210> 49
 <211> 29
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 49
 cgcaggatcc cctcaatcgt ccctgctcc 29

<210> 50
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 50
 gaagagaatt ccttccatca cga 23

<210> 51
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 51
 ccaaacgaat tcggtcaatc ac 22

<210> 52
 <211> 26
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 52
 gcaaggatcc cagactaaaa aaacag 26

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<400> 53
atcaggatcc atattattag tttaaga 27
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<220>  
<221> CDS  
<222> (1) .. (663)
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<400> 54																
atg	act	ctc	ttc	acc	act	tcc	gcc	acc	cgc	tcc	cgc	cgt	gcc	acc	gcc	48
Met	Thr	Leu	Phe	Thr	Thr	Ser	Ala	Thr	Arg	Ser	Arg	Arg	Ala	Thr	Ala	
1		5			10					15						
tgc	atc	gtc	gcg	ggc	atg	acc	ctc	gcc	ggc	gcc	gcc	gcc	gtg	ggc	ttc	96
Ser	Ile	Val	Ala	Gly	Met	Thr	Leu	Ala	Gly	Ala	Ala	Ala	Val	Gly	Phe	
			20		25					30						
tcc	gcc	ccg	gcc	cag	gcc	gcc	acc	gtg	gac	acc	tgg	gac	cgc	ctc	gcc	144
Ser	Ala	Pro	Ala	Gln	Ala	Ala	Thr	Val	Asp	Thr	Trp	Asp	Arg	Leu	Ala	
35			40					45								
gag	tgc	gag	tcc	aac	ggc	acc	tgg	gac	atc	aac	acc	ggc	aac	ggc	ttc	192
Glu	Cys	Glu	Ser	Asn	Gly	Thr	Trp	Asp	Ile	Asn	Thr	Gly	Asn	Gly	Phe	
50		55					60									
tac	ggc	ggc	gtg	cag	ttc	acc	ctg	tcc	tcc	tgg	cag	gcc	gtc	ggc	ggc	240
Tyr	Gly	Gly	Val	Gln	Phe	Thr	Leu	Ser	Ser	Trp	Gln	Ala	Val	Gly	Gly	
65		70					75					80				
gaa	ggc	tac	ccg	cac	cag	gcc	tgc	aag	gcc	gag	cag	atc	aag	cgc	gcc	288
Glu	Gly	Tyr	Pro	His	Gln	Ala	Ser	Lys	Ala	Glu	Gln	Ile	Lys	Arg	Ala	
				85		90					95					
gag	atc	ctc	cag	gac	ctg	cag	ggc	tgg	ggc	gcg	tgg	ccg	ctg	tgc	tgc	336
Glu	Ile	Leu	Gln	Asp	Leu	Gln	Gly	Trp	Gly	Ala	Trp	Pro	Leu	Cys	Ser	
			100		105					110						
cag	aag	ctg	ggc	ctg	acc	cag	gct	gac	gcg	gac	gcc	ggt	gac	gtg	gac	384
Gln	Lys	Leu	Gly	Leu	Thr	Gln	Ala	Asp	Ala	Asp	Ala	Gly	Asp	Val	Asp	
115		120					125									

```

gcc acc gag gcc gcc ccg gtc gcc gtg gag cgc acg gcc acc gtg cag 432
Ala Thr Glu Ala Ala Pro Val Ala Val Glu Arg Thr Ala Thr Val Gln
    130                135                140

cgc cag tcc gcc gcg gac gag gct gcc gcc gag cag gcc gct gcc gcg 480
Arg Gln Ser Ala Ala Asp Glu Ala Ala Ala Glu Gln Ala Ala Ala Ala
    145                150                155                160

gag cag gcc gtc gtc gcc gag gcc gag acc atc gtc gtc aag tcc ggt 528
Glu Gln Ala Val Val Ala Glu Ala Glu Thr Ile Val Val Lys Ser Gly
                165                170                175

gac tcc ctc tgg acg ctc gcc aac gag tac gag gtg gag ggt ggc tgg 576
Asp Ser Leu Trp Thr Leu Ala Asn Glu Tyr Glu Val Glu Gly Gly Trp
                180                185                190

acc gcc ctc tac gag gcc aac aag ggc gcc gtc tcc gac gcc gcc gtg 624
Thr Ala Leu Tyr Glu Ala Asn Lys Gly Ala Val Ser Asp Ala Ala Val
                195                200                205

atc tac gtc ggc cag gag ctc gtc ctg ccg cag gcc tga 663
Ile Tyr Val Gly Gln Glu Leu Val Leu Pro Gln Ala
    210                215                220

```

```

<210> 55
<211> 6
<212> PRT
<213> Mycobacterium tuberculosis

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```

<400> 55
Ala Pro Pro Ala Asp Leu
  1                5

```

```

<210> 56
<211> 7
<212> PRT
<213> Mycobacterium tuberculosis

```

```

<400> 56
Ala Pro Ala Ser Ala Asp Leu
  1                5

```

```

<210> 57
<211> 8
<212> PRT
<213> Mycobacterium tuberculosis

```

```

<400> 57
Ala Pro Pro Ala Pro Ala Glu Leu
  1                5

```

<210> 58
 <211> 4
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 58
 Ala Pro Pro Ala
 1

<210> 59
 <211> 4
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 59
 Ala Val Asn Glu
 1

<210> 60
 <211> 15
 <212> PRT
 <213> Mycobacterium tuberculosis

<220>
 <221> MOD_RES
 <222> (14)
 <223> Asp or Glu

<400> 60
 Pro Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Xaa Leu
 1 5 10 15

<210> 61
 <211> 8
 <212> PRT
 <213> Mycobacterium tuberculosis

<220>
 <221> MOD_RES
 <222> (7)
 <223> Asp or Glu

<220>
 <221> MOD_RES
 <222> (8)
 <223> Leu or Val

<400> 61
 Ala Pro Pro Ala Pro Ala Xaa Xaa
 1 5

<210> 62
 <211> 11
 <212> PRT
 <213> Mycobacterium tuberculosis

<220>
 <221> MOD_RES
 <222> (8)
 <223> Ala or Val

<400> 62
 Ala Pro Pro Val Glu Leu Ala Xaa Asn Asp Leu
 1 5 10

<210> 63
 <211> 14
 <212> PRT
 <213> Mycobacterium tuberculosis

<400> 63
 Pro Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Asp
 1 5 10